

66. The apparatus of Claim 1 wherein said computer further comprises respective data bases for storing user unique stimuli from respective users, said user unique stimuli being used to select candidate stimuli.

REMARKS

Claims 1-62 remain in this application with Claims 1, 10, 18, 43, 45, 52-53, 55-57, 60 and 62 having been amended to expedite the prosecution of this application. Claims 2-9, 11-17, 19-42, 44, 46-51, 54, 58-59 and 61 have not been amended and are believed to be patentable for the reasons set forth below. In addition, new dependent claims, namely Claims 63-66, have been added to more fully cover the invention of the present application, as discussed further below.

The Examiner has objected to the disclosure based on informalities and has requested Applicant's cooperation in correcting any errors of which he may become aware. To that end, Applicant has amended the Specification accordingly to overcome these objections and has corrected errors that he has found. Applicant, therefore, respectfully requests that the objection to the disclosure be withdrawn.

The Examiner has objected to the abstract of the disclosure under MPEP §608.01 (b) as being more than a single paragraph. To that end, Applicant has amended the abstract to consist of a single paragraph and, as such, respectfully requests that the objection to the abstract be withdrawn.

The Examiner objected to Claims 45, 60 and 62 regarding particular informalities. To that end, Applicant has amended those claims accordingly and respectfully requests that those objections be withdrawn.

The invention of the present application is directed to a thought controlled system (hereinafter the "TCS") wherein the system controls a computer operation based on one or more stimuli sensed from at least one user thought. It should be understood that the present invention is not a biofeedback device which detects whatever the frequency value is at any particular moment. Instead, the present invention is directed to detecting the thought(s) of the user and implementing the thought(s). As such, Claim 1 has been amended to overcome the art of record by clearly specifying that the invention is directed to:

detecting at least one stimulus being caused by the at least one thought of the user<sup>1</sup>;

Thus, the invention of the present application is directed to the thought(s) of the user which may encompass a whole range of brain frequencies or states. The TCS detects and implements the user's thought(s), e.g., move the cursor to select a particular option on a tool bar, such as create a new file, print a document, associate a "rose" image on the screen with a feeling of joy, etc.

The Examiner has rejected Claims 1, 3-5, 7-17, 19-22, 24, 32-40, 46-48 and 51-62 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,474,082 (Junker, hereinafter "Junker").

Applicant respectfully disagrees for the following reasons.

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<sup>1</sup>Support for this amendment is found throughout the Specification of the present application (p. 33, lines 7-10; p. 23, lines 15-19; p. 17, lines 2-3; and p. 28, lines 2-5) as well as Claim 1 as originally filed: ...caused by the thought of the user (Claim 1, line 4). Support for more than one thought is also supported by the Specification, e.g., pp. 26-27 and p. 35 line 21.

As stated above, the application of the present invention is directed to detecting the thought(s) of the user, which Junker does not do. Junker does not teach nor suggest the detection of user thought(s); what the user is thinking is not discussed. In fact, the Junker disclosure only mentions the word "thought" three times and never in the sense of detecting the thought, as in the present invention. Junker is basically an improvement on biofeedback, i.e., the recognition that an aggregate signal of EEG and EMG biopotentials is necessary for proper use of biofeedback. Biofeedback is limited to interpreting frequency spectra detected on the body. Presently, science does not know exactly how these spectra are related to thoughts. What is known is that a person can control changes in these spectra to some degree if the effect of changing his/her thinking is shown to him/her in real time. It is apparently insignificant to Junker how the user's thoughts change the EEG/EMG magnitude and frequency.

In particular, Junker relies on detecting and comparing frequency spectra emitted by the brain (EEG signals) and by the muscles (EMG signals), rather than thoughts. It then appears that only partial control of the computer, i.e., certain controls of the computer can be manipulated by the user's EEG/EMG signals (see Figs. 10-13 of Junker) but standard input means, i.e., use of the keyboard or mouse, is still required to select functions from the options bar (Display, Music, Games, Cursor, Setup, Escape, Help), or change gain and response settings (Fig. 10). Junker offers up to 10 control signals but fails to disclose how the user can control any of these signals or how to control a plurality of these signals simultaneously. The Junker system requires continual user feedback and

its elaborate frequency/phase comparison iterations are not able to detect the person's particular thoughts<sup>2</sup>.

In contradistinction, the present invention uses MSI to detect stimuli of individual thoughts whether these thoughts are radiated from a single area of the brain or whether multiple areas combined indicate that particular thought. Stimuli detection and conditioning 101 presents the thought so that it can be compared with the function select to form a specific function. Applicant uses particular thoughts whereas Junker requires the user learn a combination of mental and physical activities which change the characteristics of a comparatively small number of frequency bands called control signals.

Moreover, as stated on page 11, line 18- page 12, line 11, the present application clearly distinguishes over biofeedback control mechanisms, such as that disclosed in U.S. Patent No. 5,337,100 (Pope) which is a similar biofeedback mechanism to the Junker system. Neither Pope nor Junker teach or suggest detecting the thoughts of the user.

Furthermore, the present invention supports virtually as many stimuli as the person has thoughts without the biofeedback delay.

Thus, for all of the above reasons, Applicant respectfully submits that Claim 1, as amended, is patentable over the art of record and respectfully requests that the §102(b) rejection be withdrawn.

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<sup>2</sup>It, therefore, appears that Junker actually teaches away from the TCS of the present invention since Junker expends so much effort in detecting brain states by comparing phase-locked loop results (Junker, col. 12, lines 53-60) to determine whether the phase was advancing or retarding, while using so much system reaction time for feedback from the user for every selection of reference frequencies (Junker, col. 12, lines 19-21). This operation of the phase-locked loop program several times equal to the number of control signal frequencies selected by the user requires considerably more time than, as in the present TCS, it would take to detect a stimulus and compare its number with a thought identification number.

Claim 3 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 4 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that the EEG and EMG biopotentials are auxiliary stimuli to the Junker system. In fact, both the EEG and EMG are required signals, without which, the Junker system would no longer be different than other biofeedback systems, as he states at col. 3, lines 59-64. In contradistinction, the auxiliary stimuli specified in Claim 4 are additional to, or alternative to, the stimuli input specified in Claim 1<sup>3</sup>. Thus, for all of the above reasons, Applicant submits that Claim 4 is patentable over the art of record.

Claim 5 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 7 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 8 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 9 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that the processing unit 30 and the I/O bus 57 of Junker disclose the communication of information pertaining to the user's thoughts. As stated previously, the Junker disclosure only mentions the word "thought" three times and never in the sense of detecting the thought, as in the present invention. Thus, for all of these reasons, Applicant respectfully submits that Claim 9 is patentable over the art of record.

Claim 10 is dependent upon Claim 9 and is patentable for the same reasons. In addition, Applicant has amended Claim 10 to more clearly define over Junker by replacing

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<sup>3</sup>Present Application, p. 20, lines 15-16

“specific brain activity” with “specific thought activity”. Furthermore, Applicant respectfully disagrees with the Examiner’s equating the output devices 21 (e.g., video display, LCD, LED) with the brain stimulating means, since these output devices do not also include the limitation of “being coupled to the brain of the user” as specified in Claim 10. Thus, output devices 21 fail to meet the limitations of Claim 10 and, as such, Applicant respectfully submits that Claim 10 is patentable over the art of record.

Claim 11 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 12 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner’s equating the menu bar 602 of Junker with the designating means of Claim 12; as specified in Claim 12, the designating means permits the user:

...to designate a particular representation to be associated with said at least one stimulus.

Thus, the user is able to associate a particular representation with the at least one stimulus. In contradistinction, the user’s use of the menu bar 602 in Junker is nothing more than the user selecting a predetermined computer function, i.e., the user cannot determine what representation he/she wishes to associate with a stimulus. In particular, the user in Junker can select either a Display, Music, Games, Cursor, Setup, Escape or Help function, i.e., predetermined functions, from the menu bar 602 but he/she cannot associate a particular representation with at least one stimulus via that menu bar 602. Thus, for all of these reasons, Applicant respectfully submits that Claim 12 is patentable over the art of record.

Claim 13 is dependent upon Claim 12 and is patentable for the same reasons.

Claim 14 is dependent upon Claim 13 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner that Junker meets this limitation by its own means of classification among the different control signals. Nowhere does Junker teach or suggest the classifying of inadvertent or undesired action by a degree of danger. Thus, for all of these reasons, Applicant respectfully submits that Claim 14 is patentable over the art of record.

Claim 15 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 16 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's conclusion regarding the correlating of stimuli. In particular, Claim 16 specifies that the means to explore user characteristics correlates stimuli with user thoughts and feelings. In contradistinction, it is not possible for Junker to detect particular thoughts of a user by correlating and assigning "frequencies with harmonics of the fundamental". Thus, for all of these reasons, Applicant respectfully submits that Claim 16 is patentable over the art of record.

Claim 17 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 19 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 20 is dependent upon Claim 3 and is patentable for the same reasons.

Claim 21 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 22 is dependent upon Claim 21 and is patentable for the same reasons.

Claim 24 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 32 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 33 is dependent upon Claim 11 and is patentable for the same reasons.

Claim 34 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 35 is dependent upon Claim 34 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's conclusion that Junker col. 8, lines 23-26 disclose the limitations of Claim 35. In particular, col. 8, lines 23-26 state that :

...the user is able to sense how changes of EEG and EMG biopotentials effect the control signals. (emphasis added),

and not user thought(s), as is the case in the present invention. Thus, for all of these reasons, Applicant respectfully submits that Claim 35 is patentable over the art of record.

Claim 36 is dependent upon Claim 11 and is patentable for the same reasons.

Claim 37 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 38 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that Junker meets the limitations of Claim 38. In particular, "coactive stimuli" as defined in the present application (p. 39, lines 8-10) are stimuli that are found to be associated and always coactive. Junker does not teach or suggest the detection of such defined stimuli and, therefore, for all of the above reasons, Applicant respectfully submits that Claim 38 is patentable over the art of record.

Claim 39 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 40 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that Junker meets the limitations of Claim 40. In the present invention, Applicant chose to offer the user the



option of providing two distinct sequential thought stimuli in order to avoid errors. As stated in the present application:

In some cases the user is required to produce two sequential thought signals rather than one in order to avoid errors... (present application, p. 30, lines 18-19).

The "two sequential thought signals" are not the same as Junker's iteration process to determine a signal frequency or frequency band. Junker sequentially scans the user-selected control signals, each one making up to 1600 iterations to find an appropriate/acceptable brain-body match (EEG and EMG of the proper phase or frequency); see Junker, col. 9, lines 58-67. These iteration procedures are then repeated up to 10 times to match up to 10 predetermined control signal frequencies (Junker, col. 10, lines 1-2). This is very different from detecting a particular thought followed by another particular thought where the sequence carries with it unique information, as disclosed in the present invention. Thus, for all of the above reasons, Applicant respectfully submits that Claim 40 is patentable over the art of record.

Claim 46 is dependent upon Claim 1 and is patentable for the same reasons. Furthermore, Applicant respectfully disagrees with the Examiner's assertion that the control signal generation means of Junker formulates statistics. The word "statistics" is not even mentioned in Junker. Thus, for all of these reasons, Applicant respectfully submits that Claim 46 is patentable over the art of record.

Claim 47 is dependent upon Claim 46 and is patentable for the same reasons.

Claim 48 is dependent upon Claim 46 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that Junker data

store meets the limitations of Claim 48. Nowhere does Junker teach or suggest a means that produces an output which describes a minimum configuration. Thus, for all of these reasons, Applicant respectfully submits that Claim 48 is patentable over the art of record.

Claim 51 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Applicant respectfully disagrees with the Examiner's assertion that Junker meets the limitations of Claim 51. In particular, the Examiner asserts that Junker discloses an electrode 22 that forms a communication channel between the operator's brain-body signals and various external devices (no. 55) such as a wheel chair, cursor control, etc. However, as specified in the claim, the communication path is between the user's brain and a user body part to be controlled, i.e., the present invention substitutes a bridge internally or externally (of the user body) between the brain and another part of the body:

TCS may be used to substitute for diseased intermediate areas in the communication path between the brain and a body part to be controlled, e.g., an arm or leg muscle. TCS bridges the gap between the brain and a part of the body which appears to be paralyzed. (present application, p. 41, lines 16-18).

Thus, Junker does not teach or suggest this type of substitution. Therefore, for all of these reasons, Applicant respectfully submits that Claim 51 is patentable over the art of record.

Claim 52 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Claim 52 has been amended to more fully cover the present invention. In particular, Claim 52 now specifies the miniaturized unit as being positionable near or within the body of the user. This is fully supported by the Specification at page 42, lines 7-8 which state that the miniaturized unit may be applied invasively or noninvasively to the user. Thus, Applicant respectfully submits that amended Claim 52 is patentable over the art of record.

Claim 53 is dependent upon Claim 52 and is patentable for the same reasons. Furthermore, Claim 53 has been amended to more clearly define over the art of record. To that end, Claim 53 now specifies that the remote communication means provides information and control capability<sup>4</sup> concerning particular thoughts between the user and a remotely-located device. As stated previously with regard to Claim 1, Junker does not teach nor suggest the detection of the thought(s) of the user. Claim 53 permits the transfer of information about the user's thoughts using remote communication. Thus, for the same reasons, Applicant respectfully submits that Claim 53 is patentable over the art of record.

Claim 54 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 55, like Claim 1, is directed to a thought controlled system. As such, Claim 55 has been amended to more clearly define over the art of record and is also patentable for all of the same reasons set forth above regarding Claim 1. Thus, for all of these reasons, Applicant respectfully submits that Claim 55 is now patentable over the art of record.

Claim 56 is dependent upon Claim 55 and is patentable for the same reasons. Claim 56 has also been amended to be consistent with the terminology of Claim 55.

Claim 57 is dependent upon Claim 56 and is patentable for the same reasons. In addition, Claim 57 is similar to Claim 4 and has been amended to be consistent therewith and is therefore patentable for the same reasons.

Claim 58 is dependent upon Claim 57 and is patentable for the same reasons. Furthermore, as was discussed earlier with regard to Claim 4, Applicant respectfully

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<sup>4</sup>Present application, p. 45, lines 15-21

disagrees with the Examiner's assertion that the auxiliary detecting means is met by Junker's EMG and EEG detection since both of these signals are required and therefore cannot be considered "auxiliary". Thus, for all of the above reasons, Applicant respectfully submits that Claim 58 is patentable over the art of record.

Claim 59 is dependent upon Claim 58 and is patentable for the same reasons.

Claim 60 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 61 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 62 is dependent upon Claim 56 and is patentable for the same reasons.

The Examiner has rejected Claim 2 under §103 as being unpatentable over Junker in view of U.S. Patent No. 4,757,438 (Thatte et al., hereinafter "Thatte"). In particular, the Examiner asserts that since Junker does not reference "magnetic source imaging" as stimuli input means, Thatte, when viewed in combination with Junker, makes up for that deficiency.

Applicant respectfully disagrees for the following reasons. Claim 2 is dependent upon Claim 1 and is patentable for the same reasons. Furthermore, it is apparent that the Examiner has confused MSI (magnetic source imaging) with "medium scale integration" since Thatte does not concern magnetic source imaging. Rather, Thatte concerns memory management technology that uses solid state technologies such as large scale integration (LSI), medium scale integration (MSI) and transistor-transistor logic (TTL). See Thatte, col. 6, line16. As such, Applicant respectfully submits that Claim 2 is patentable over Junker in view of Thatte.

The Examiner has rejected Claim 18 under §103 as being unpatentable over Junker in view of U.S. Patent No. 4,949,726 (Hartzell et al., hereinafter "Hartzell"). In particular, the Examiner asserts that since Junker does not reference the use of the apparatus by a plurality of users, Hartzell, when viewed in combination with Junker, makes up for that deficiency.

Applicant respectfully disagrees for the following reasons. Claim 18 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Claim 18 has been amended to more clearly define over the art of record. To that end, Claim 18 now specifies the computer further comprises respective data bases for storing unique stimuli from respective users and wherein that stimuli is used for security and identification of users. Thus, Hartzell does not teach nor suggest the use of such data from respective data bases for such use. As such, Applicant respectfully submits that amended Claim 18 is patentable over the art of record.

The Examiner has rejected Claims 6, 23, 25-31, 49 and 50 under §103 as being unpatentable over Junker in view of U.S. Patent No. 5,546,943 (Gould, hereinafter "Gould"). In particular, the Examiner asserts that since Junker does not reference "magnetic resonance imaging" as auxiliary stimuli input means, Gould, when viewed in combination with Junker, makes up for that deficiency.

Applicant respectfully disagrees with the rejection of Claim 6 for the same reasons regarding the patentability of Claim 4 since Claim 6 is dependent upon Claim 4.

With respect to Applicant's claims concerning artificial intelligence, namely Claims 23, 25-31 and 49-50, Applicant respectfully disagrees with the Examiner for the following

reasons. Claims 23, 25-31 and 49-50 are all dependent upon Claim 1 and are patentable for the same reasons. In addition, Gould only makes a terse reference to the phrase "artificial intelligence" at col. 9, lines 37-43. This terse reference does not teach nor suggest the manner in which artificial intelligence is specified in these claims, e.g., in recognizing and analyzing the signal strength of at least one stimulus. It is unclear what the Examiner means by "AI criteria" and since Gould defines no "AI criteria" it is also unclear as to how Gould makes Claims 23, 25-31 and 49-50 obvious. Thus, for all of these reasons, Applicant respectfully submits that Claims 23, 25-31 and 49-50 are patentable over the art of record.

The Examiner has rejected Claim 41 under §103 as being unpatentable over Junker. In particular, the Examiner asserts that although Junker does not reference fail safe means for automatically saving all data relating to current system status, etc., such a feature is well-known for electronic operating systems. However, Applicant respectfully disagrees with the rejection of Claim 41 for the same reasons regarding the patentability of Claim 1 since Claim 41 is dependent upon Claim 1.

The Examiner has rejected Claims 42-45 under §103 as being unpatentable over Junker in view of U.S. Patent No. 5,325,133 (Adachi, hereinafter "Adachi"). In particular, the Examiner asserts that since Junker does not reference means for detecting movement of the user's eye to initiate a function control signal, Adachi, when viewed in combination with Junker, makes up for that deficiency. However, Applicant respectfully disagrees with the rejection of Claims 42-45 for the same reasons regarding the patentability of Claim 1 since Claims 42-45 are dependent upon Claim 1.

Applicant has also added the following new dependent claims to more fully cover his invention with regard to the respective user data bases. To that end, Applicant has added Claim 63 to further identify the use of the respective data bases for storing user unique stimuli, namely, to increase dependability by detecting two stimuli sources that are found to be associated and coactive.<sup>5</sup> Claim 64 specifies the use of the user unique stimuli for supporting artificial intelligence 209<sup>6</sup>. Claim 65 specifies the use of the user unique data for determining psychological impact thoughts of the user<sup>7</sup>. Claim 66 specifies the use of the user unique data for selecting candidate stimuli<sup>8</sup>. Applicant respectfully submits that new Claims 63, 65-66, which are dependent upon Claim 1, are also patentable for the same reasons. In addition, new Claim 64 is dependent upon Claim 23 and is patentable for the same reasons.

The Applicant is mindful of the requirement to submit formal acceptable drawings and will do so upon the indication of allowability of this case.

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<sup>5</sup>Present application, p. 31, lines 9-10.

<sup>6</sup>Present application, p. 37, line 18.

<sup>7</sup>Present application, p. 36, lines 1-5 and lines 12-14.

<sup>8</sup>Present application, p. 36, line 14.

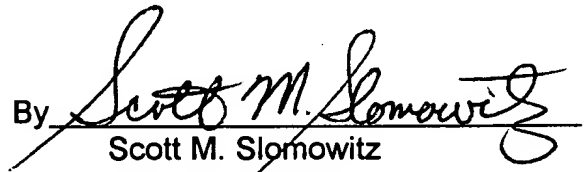
In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 1-66 now appearing in this application are allowable and such favorable action is respectfully requested.

Respectfully submitted,

CAESAR, RIVISE, BERNSTEIN,  
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March 17, 1998

By

A handwritten signature in cursive script, appearing to read "Scott M. Slomowitz", written over a horizontal line.

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